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the pole of a magnet, which produced rotation, and on bringing it near enough, a depression of the mercury above the pole. The above phenomenon appeared, independent of any elevation in the temperature of the mercury, nor can it be attributed to electric repulsion. It must be referred to forces producing motions in right lines, or undulations from the surfaces of the wires as a centre; and it seems, says the author, strongly opposed to the idea of the electro-magnetic results, being produced by the motion of a single imponderable fluid.

On Fluid Chlorine. By M. Faraday, *Chemical Assistant in the Royal Institution.* Communicated by Sir Humphry Davy, Bart. Pres. R.S. Read March 13, 1823. [*Phil. Trans.* 1823, p. 160.]

By exposing the solid hydrate of chlorine, hermetically sealed up in a glass tube, to a temperature of about 100, the chlorine is evolved from it under such pressure that it assumes the liquid form, appearing of a bright yellow colour, and sinking in the warm water without showing any tendency to mix with it till the temperature fell to about 70°, when the whole re-assumed the appearance of solid hydrate. The liquid chlorine, in its pure form, did not congeal at 0°, and it instantly assumed its usual elastic form upon removing the pressure to which it was subjected. By condensing dry chlorine by means of a syringe into a glass tube, Mr. Faraday succeeded in converting a portion of it into a liquid, under a pressure of about four atmospheres.

The specific gravity of liquid chlorine he considers to be about 1.33.

In a note attached to this paper Sir Humphry Davy announces his having succeeded in obtaining muriatic acid in a liquid form, by causing sulphuric acid and muriate of ammonia to act upon each other in a strong sealed tube. The gas thus gradually liberated under pressure, condensed into an orange-coloured liquid, lighter than sulphuric acid, and instantly assuming the elastic state when the tube is broken.

Sir Humphry suggests the probability of other gases being condensed into the liquid form by a similar method of condensation under pressure; and points out the advantages which this mode possesses over a sudden mechanical pressure, and condensation by exposure to cold.

On the Motions of the Eye, in illustration of the Uses of the Muscles and Nerves of the Orbit. By Charles Bell, Esq. Communicated by Sir Humphry Davy, Bart. P.R.S. Read March 20, 1823. [*Phil. Trans.* 1823, p. 166.]

The author of this paper has entered into an examination of the external apparatus and muscles of the eye, with the view of explaining the necessity of six nerves being given to the parts contained in the orbit.

In the course of this examination he shows that the six muscles, which are attached to the eye-ball, do not, as has been supposed, form one class of voluntary muscles; but that while the four straight muscles, or recti, are provided for the voluntary motions of the eye when directed to objects, the other two, called oblique, perform certain involuntary motions. These involuntary actions are shown to be a provision for the better protection of the eye; for when the eye-lids wink and close to wash the cornea, the effect would be incomplete, and the object but imperfectly attained, unless the cornea were at the same time raised by the revolving of the eye-ball.

After having proved that the eye-ball revolves so as to carry the cornea upwards during the motion of the eye-lids; and having shown also that the oblique muscles are the agents in this involuntary and instinctive motion,—he proceeds to demonstrate that the same muscles elevate the cornea during sleep.

The author says, that while we are awake, the eye is under the active influence of the four straight muscles; but when the eye-lids are closed in sleep these muscles resign their office, and the involuntary oblique muscles prevail, so as to draw the cornea under the upper eye-lid. This is also shown to be the condition of the eye in faintness and on the approach of death, and on all other occasions when languor or debility prevail over the voluntary muscles of the frame.

The author notices, incidentally, that the enjoyment of the sense of vision is attended with the excited condition of the recti or voluntary muscles, and that insensibility to the impression on the eye is followed by relaxation and neglect of the same class of muscles, and consequently that a depraved and injured condition of the retina is one cause of squinting; for the oblique prevailing, while the recti or involuntary muscles are neglected, draw the eye so affected from the parallel line of vision.

After having shown that the recti, or voluntary muscles, are strictly associated with the activity of the retina or organ of vision, he proceeds to express his opinion that the ideas received through the eye are not limited to the office of the retina, but that the sense of vision properly so called, is aided by the sense of voluntary exertion in the recti muscles, and afford us the knowledge of the position and relation of bodies, in addition to the ideas of form, shades, and colours, which are received through the retina.

The paper is illustrated by references to comparative anatomy, and by observations and experiments on man and brutes.

After having described the variety of actions performed by the muscles of the eye, the author proposes in the second part of the paper to arrange the nerves which go into the orbit according to their offices.